



A.D. 1854 . . . N^o 1175.

S P E C I F I C A T I O N

OF

MAHLON LOOMIS.

MANUFACTURE OF ARTIFICIAL TEETH.

LONDON:

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A.D. 1854 N° 1175.

Manufacture of Artificial Teeth.

LETTERS PATENT to Mahlon Loomis, of the State of Massachusetts, of the United States of America, for the Invention of “**AN IMPROVEMENT IN THE MANUFACTURE OF ARTIFICIAL TEETH.**”

Sealed the 21st July 1854, and dated the 26th May 1854.

PROVISIONAL SPECIFICATION left by the said Mahlon Loomis at the Office of the Commissioners of Patents, with his Petition, on the 26th May 1854.

I, MAHLON LOOMIS, of the State of Massachusetts, of the United States of
5 America, do hereby declare the nature of my Invention of “**AN IMPROVEMENT
IN THE MANUFACTURE OF ARTIFICIAL TEETH**” to be as follows :—

My Invention consists in making whole sets, or the upper or lower halves,
or parts of sets of artificial teeth, all of porcelain. A half set consists of but
one piece of material, there being no metallic plate, as in the usual way, but
10 the same material of which the teeth themselves are made is used instead of a
metallic plate. To make a full set of artificial teeth, thin silver plated or
other proper metal metallic plates are first to be fitted accurately to the upper
and lower jaws, in order that the exact size and shape of that part of the mouth
to be fitted may be definitely known. These plates are to be made by the
15 ordinary process of making gold plates, to which sets of teeth are usually
fastened. Wax is next to be placed upon these plates, in order to determine
somewhat the length and position of the teeth to be made.

Next the inside of the plate, or that side which is applied to the flesh of the
mouth, is to be filled and covered over with dentists' plaster [wet to a convenient

Loomis' Improvements in the Manufacture of Artificial Teeth.

consistence], and said plate with the plaster is to be placed upon a thin bed of the same plaster, so that the plaster on the plate shall rest on the bed of plaster. To prevent the bed of plaster from spreading, and the better to shape it, it may be confined by means of a strip of sheet iron about an inch in width, bent somewhat in the form of the letter U, and continued straight 5 across, so that the ends may touch each other.

When this bed of plaster has become sufficiently hard or set, the sheet iron or metallic form last mentioned is to be removed. The metallic plate is next to be taken off from the whole of the plaster; after this the plaster may be neatly trimmed. Then this plaster cast, upon which is to be formed the upper 10 half of the set of teeth, is to be enlarged, to counteract in part the effect of the shrinkage of the porcelain material consequent upon baking. This may be effected as follows:—As different mixtures for porcelain vary in the amount they contract by baking, the extent of enlargement [as near as I can estimate the enlargement, I should say, generally speaking, it would increase each of the 15 dimensions of the mould one-sixteenth of it,] must be in the proportion to the amount of shrinkage, which may be ascertained by measurement and experiment. This ascertained, the aforesaid plaster cast, upon which is to be formed the half set, or that portion for the upper jaw, may be scooped out sufficiently to allow for the shrinkage, and it may be extended back or lengthened the 20 proportional distance from the mark left by the rear edge or limit of the plate, and so as to allow for the longitudinal shrinkage. When the necessary enlargement of the plaster cast has been completed, the wax which was before placed on the metallic plate is to be removed therefrom and placed on the plaster cast, the deficiency at its two extremities being supplied, if necessary, 25 and its height and breadth corrected (if requisite) by the addition of other portions of wax. This wax so put on the cast is designed to form a space between two pieces of plaster, which are to compose the matrix for forming the porcelain material for the teeth. After the wax has been thus adjusted it may be oiled, in order that prepared plaster, which is next to be poured or placed 30 upon and over both the wax and the remaining surface of the plaster cast, upon which it is placed, may subsequently be more easily separated from said wax and plaster, which separation is to be effected when this plaster last used has become hard or set. This plaster last put in is for the purpose of forming the other portion of the matrix. Next a sufficient portion of the plaster so removed 35 must be cut away from the whole mass, in order to make, when the two parts of the mould are placed in contact, a space which will admit of the porcelain mixture running back far enough to form that portion of the upper part of the set which is usually made of metallic plate. The space thus made between

Loomis' Improvements in the Manufacture of Artificial Teeth.

the masses of plaster constitutes the matrix for forming the upper portion of the set of teeth. That matrix for forming the lower portion of the set of teeth is to be made in a similar manner. The enlargement may be done by sawing the mass of plaster apart crosswise, and next glueing the parts firmly together
5 with a piece of wood between them, such piece of wood to correspond in thickness with the amount of shrinkage of the porcelain material in a longitudinal direction. Next the whole may be again cut apart at right angles with the first separation, and again glued together with a similar strip of wood between the two halves, such strip allowing for the transverse shrinkage.

10 Now, the inferior or last made half of each of these matrices may be spaced off upon the edge which determines the outer surface of the porcelain material, and so as to determine the width and positions of the teeth to be made. First, that for the upper teeth is spaced to suit the occasion; then to space that for the lower teeth the flat sides of the two may be placed together, and that for the
15 lower teeth spaced by marking between the spaces of that for the upper teeth, then after thinly coating with bayberry tallow that surface of the matrix which is a representation of that part of the mouth to be fitted, it is ready to receive the porcelain material, which may next be carved or shaped, as may be necessary. This being done, the mass of porcelain material may be warmed until it
20 melts the tallow beneath it, so as to admit of its being removed from the matrix. While in this condition, any desirable shape may be given to its edges of the part so formed in the matrix, by applying, where desired, a thinly diluted portion of the porcelain mixture by means of a small camel's hair pencil. Next the cast is to be placed on the tile for baking it, in the usual
25 way as practised in manufacturing porcelain. After the two portions have been taken from the furnace the last time, they may be ground on their inside surfaces where they may need it, in order to make them fit accurately a plaster bed or perfect representation of that part of the mouth which it is desired to fit. When the mouth to be fitted with teeth is of such a peculiar shape as
30 to render it a difficult operation to remove the carved work from the matrix which faithfully represents it, as is sometimes the case with the upper jaw, the difficulty may be obviated in the following manner:—After the metallic plate has been accurately fitted to the mouth, it may be taken and oiled on its inside surface. Next, with dentists plaster, moistened to a convenient consistence,
35 such portions of the oiled surface of the plate may be covered, as shall most seem to interfere with its direct removal from the hardened mass of plaster which is afterwards made to fill it; and it is well to divide into small separate pieces that plaster which is thus first placed in the plate, in order that it may be subsequently more easily removed from the work which is to be shaped and

Loomis' Improvements in the Manufacture of Artificial Teeth.

carved upon it. Next, when these plaster pieces have become hard, their outer surface should be thinly covered with bayberry tallow or its equivalent. The remaining portion of the oiled surface of the plate is next filled and covered over with a similar preparation of plaster; when this becomes hard it is also to be covered with bayberry tallow or the equivalent, and the tallowed surface 5 placed upon a thin bed of prepared plaster, confined to its place by means of a sheet iron form, as before spoken of. The plate may next be removed and the mould enlarged, and finished in the same way as the matrix before described.

Some of the advantages of making sets of teeth in my way are quite appa- 10 rent; for a half set thus, all solid and in one piece of material, will be in use a cleaner and purer job than those made in the usual way [viz., of gold metallic plate and teeth fitted thereto], there being no joints around the teeth made after my plan for the accumulation of foreign substances. They can also be afforded at an incomparably lower price than those as usually made, thus 15 extending the benefits of artificial teeth to hundreds of persons who cannot afford them on gold or platina plates. In actual practice I find it is much easier to make teeth in this way, my method proving to be a great saving of time and labor. I do not claim the process above set forth. In making sets of artificial teeth, I do not claim the spreading of a gum enamel over one side 20 of a metallic roof plate upon which the teeth are fastened, nor the extension of the porcelain gum someway and not entirely upon the roof; but what I claim as my Invention is, the improved manufacture of whole or half sets of porcelain or mineral teeth, substantially as described.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed 25 by the said Mahlon Loomis in the Great Seal Patent Office on the 26th September 1854.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, MAHLON LOOMIS, of the State of Massachusetts, of the United States of America, send greeting. 30

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-sixth day of May, A.D. 1854, in the seven-teenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Mahlon Loomis, Her special license that I, the said Mahlon Loomis, my executors, administrators, and assigns, or such others as I, 35 the said Mahlon Loomis, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter

Loomis' Improvements in the Manufacture of Artificial Teeth.

during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention of “**A NEW AND USEFUL IMPROVEMENT IN THE MANUFACTURE OF ARTIFICIAL TEETH,**” upon the condition
5 [amongst others] that I, the said Mahlon Loomis, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office, or Office of Her Majesty's Commissioners of Patents, within six calendar months next and
10 immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Mahlon Loomis, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following Specification, and the accompanying Drawing, letters, figures, and references thereof:—

15 Of the said Drawing, Figure 1 represents a perspective view of my improved upper jaw half sets of teeth. Figure 2 is a perspective view of the lower jaw half sets of the kind. Figures 3 and 4 are longitudinal sections of such half sets. Figure 5 is a top view of the half mould of the upper jaw, the same exhibiting, by the colored portion *a*, the amount of enlargement for shrinkage
20 of the porcelain, as herein-after described. Figure 6 is a similar view of the lower part of the mould for the lower jaw set, and shows the process of enlargement for such purpose, it being effected by sawing the mould longitudinally and transversely into four pieces *b, c, d, e*, and extending them apart and inserting strips of wood *f, g*, between them.

25 My Invention consists in making whole sets, or the upper or lower halves or parts of sets of artificial teeth, all of porcelain.

A half set consists of but one piece of material, there being no metallic plate as in the usual way; but the same material of which the teeth themselves are made is used instead of a metallic plate.

30 To make a full set of artificial teeth, thin silver plated or other proper metallic plates are first to be accurately fitted to the upper and lower jaws, in order that the exact size and shape of that part of the mouth to be fitted may be definitely known. These plates are to be made by the ordinary process of gold plates, to which sets of teeth are usually fastened. Wax is next to be
35 placed upon these plates, in order to determine somewhat the length and position of the teeth to be made. Next, the inside of the plate, or that side which is applied to the flesh of the mouth, is to be fitted and covered over with dentists plaster [wet to a convenient consistence], and said plate with the plaster is to be placed upon a thin bed of the same plaster, so that the plaster

Loomis' Improvements in the Manufacture of Artificial Teeth.

on the plate shall rest on the bed of plaster. To prevent the bed of plaster from spreading and the better to shape it, it may be confined by means of a strip of sheet iron about an inch in width, bent somewhat in the form of the letter **U**, and continued straight across, so that the ends may touch each other. 5

When this bed of plaster has become sufficiently hardened, the sheet iron or metallic form last mentioned is to be removed. The metallic plate is next to be taken off from the whole of the plaster; the plaster after this may be neatly trimmed. When this plaster cast, upon which is to be formed the upper half of the set of teeth, is to be enlarged, to counteract in part the effect of the shrinkage of the porcelain material consequent upon baking, such may be effected as follows:—As different mixtures for porcelain differ in the amount they contract by baking, the extent of enlargement [as near as I can estimate this enlargement, I should say, that, generally speaking, it would increase the dimensions of the mould one-sixteenth of it,] must be in proportion to the amount of shrinkage, which may be ascertained by measurement and experiment. 10 15

This ascertained, the aforesaid plaster cast, upon which is to be formed the half set, or that portion of the upper jaw, may be scooped out sufficiently to allow for shrinkage, and it may be extended back or lengthened the proportional distance from the mark left by the rear edge or limit of the plate, and so as to allow for the longitudinal shrinkage. When the enlargement of the plaster cast has been completed, the wax which was before placed on the metallic plate is to be removed therefrom and placed on the plaster cast, the deficiency at its two extremities being supplied, if necessary, its height and breadth corrected [if requisite] by the addition of other portions of wax. This wax so put on the cast is designed to form a space between the two pieces of plaster which are to compose the matrix for forming the porcelain material of the teeth. 20 25

After the wax has been thus adjusted it may be oiled, in order that prepared plaster, which is next to be poured or placed upon and over both the wax and remaining surface of the plaster cast upon which it is placed, may be subsequently the more easily separated from said wax and plaster, which separation is to be effected when this plaster last used has become hard or set. This plaster last put on is for the purpose of forming the other portion of the matrix. Next, a sufficient portion of the plaster so removed must be cut away from the whole mass, in order to make, when the two parts of the mould are placed in contact, a space which will admit of the porcelain mixture running back far enough to form that portion of the upper part of the set which is 30 35

Loomis' Improvements in the Manufacture of Artificial Teeth.

usually made of metallic plate. The space thus made between the masses of plaster constitutes the matrix for forming the upper portions of the set of teeth.

That matrix for forming the lower portion of the set of teeth is to be made in
5 a similar manner. The enlargement may be done by sawing the mass of plaster apart crosswise, and next glueing the parts firmly together with a piece of wood between them, such piece of wood to correspond in thickness with the amount of shrinkage of the porcelain material in a longitudinal direction. Next, the whole may again cut apart at right angles with the first separation, and
10 again glued together with a similar strip of wood between the two halves, such strip allowing for the transverse shrinkage.

Now the inferior or last made half of each of these matrices may be spaced off upon the edge which determines the outer surface of the porcelain material, and so as to determine the width and position of the teeth to be made. First,
15 that for the upper teeth is spaced off to suit the occasion; then to space that for the lower teeth, the flat sides of the two may be placed together, and that for the lower teeth spaced by marking between the spaces of that for the upper teeth; then, after thinly coating with bayberry tallow that surface of the matrix which is a representation of the part of the mouth to be fitted, it is
20 ready to receive the porcelain material, which may next be carved or shaped as may be necessary. This being done, the mass of porcelain may be warmed until it melts the tallow beneath, so as to admit of its being removed from the matrix.

While in this condition, any desirable shape may be given to its edges of
25 the part so formed in the matrix by applying, where desired, a thinly diluted portion of the porcelain mixtures by means of a small camel's hair pencil. Next, the cast is to be placed on the tile for baking it, in the usual way as practised in manufacturing porcelain. After the two portions have been taken from the furnace the last time, they may be ground on their inside surfaces
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35 may be obviated in the following manner:—After the metallic plate has been accurately fitted to the mouth, it may be taken out and oiled on its inside surface. Next, with dentists plaster, moistened to a convenient consistence, such portions of the oiled surface of the plate may be covered as shall most seem to interfere with its direct removal from the hardened mass of plaster, which

Loomis' Improvements in the Manufacture of Artificial Teeth.

is afterwards made to fill it; and it is well to divide into small separate pieces that plaster which is thus first placed in the plate, in order that it may be subsequently more easily removed from the work which is to be shaped and carved upon it. Next, when these plaster pieces have become hard, their outer surface should be thinly covered with bayberry tallow or its equivalent. The 5 remaining portion of the oiled surface of the plate is next filled and covered over with a similar preparation of plaster. When this becomes hard it is also to be covered with bayberry tallow or the equivalent, and the tallowed surface placed upon a thin bed of prepared plaster, confined to its place by means of a sheet iron form, as before spoken of. The plate may next be removed 10 and the mould enlarged, and finished in the same way as the matrix before described.

Some of the advantages of making sets of teeth in my way are quite apparent; for a half set thus, all solid and in one piece of material, will be in use a cleaner and purer job than those made in the usual way [viz., of gold metallic plate 15 and teeth fitted thereto], there being no joints around the teeth made after my plan for the accumulation of foreign substances. They can also be afforded at an incomparably lower price than those as usually made, thus extending the benefits of artificial teeth to hundreds of persons who cannot afford them on gold or platina plates. In actual practice I find it is much easier to make 20 teeth in this way, my method proving to be a great saving of time and labor. I have fitted several jaws, both upper and lower, with sets of teeth made on my improved plan, which teeth are now in daily use, answering every requirement. I do not claim the process above set forth. In making sets of artificial teeth, I do not claim the spreading of a gum enamel over one side of a 25 metallic roof plate upon which the teeth are fastened, nor the extension of the porcelain gum some way and not entirely upon the roof; but what I claim as my Invention is, the improved manufacture of whole or half sets of porcelain or mineral teeth, substantially as described.

In testimony whereof, I have hereunto set my hand and seal, this Twenty- 30 second day of June, A.D. 1854.

MAHLON LOOMIS. (L.S.)

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1854.

FIG. 1.

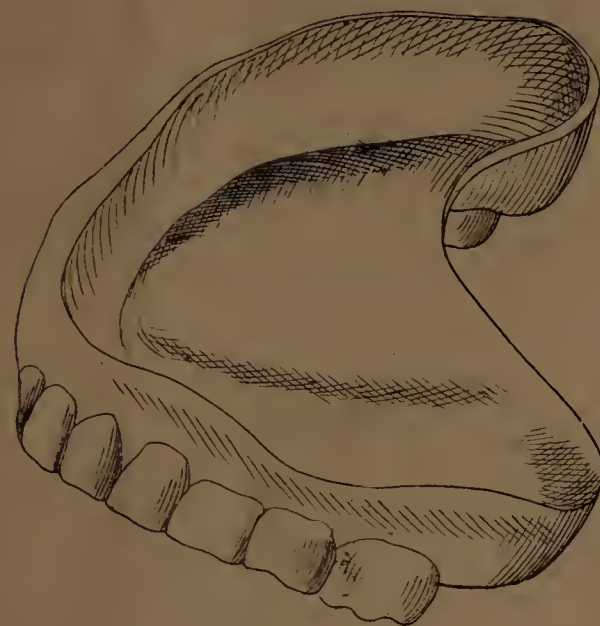


FIG. 2.

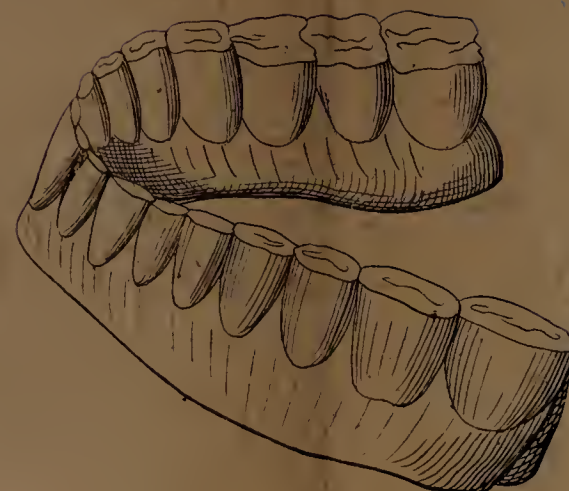


FIG. 5.



FIG. 6.

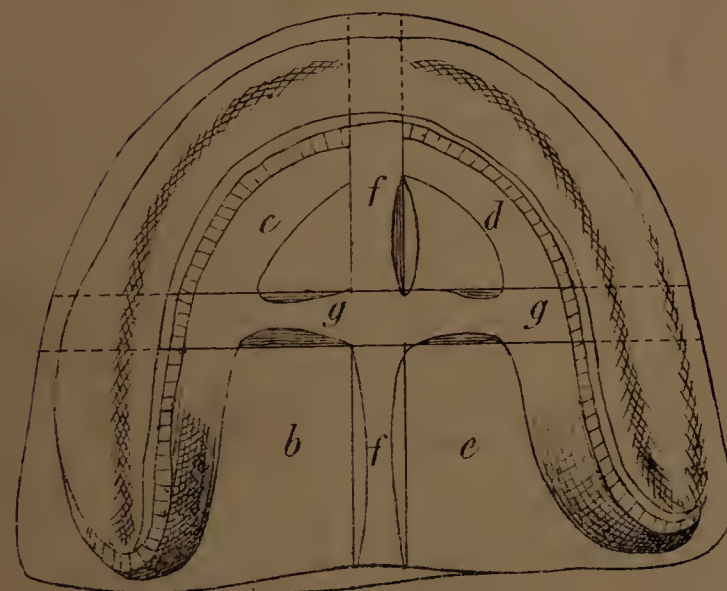


FIG. 3.

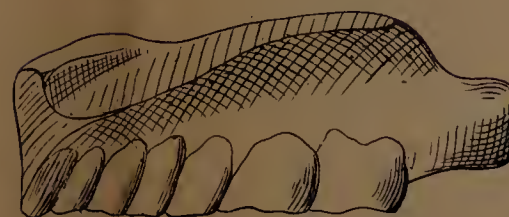


FIG. 4.



The filed drawing is partly colored.

Malby & Sons, Lith.

